## Mathematics 1262 (C++ Programming) Hilary 2014

February 9, 2014

## 1 Assignment A04, due 14/2/14

There are two alternative assignments. If you choose this one, please submit it as **A04.cpp**, nothing else, not ass3.cpp nor a03.cpp nor a03.C nor A3.cpp nor anything else.

Write a C++ program which reads in a matrix, prints it, constructs its transpose, and prints the transpose.

- The matrices should be declared as double (name)[10][10], though probably only part of them will be used.
- You must write a routine void read\_matrix () to read in the matrix. Input format will be

 $m n a_{00} \ldots a_{mn}$ 

such as

(as usual, newlines are not important).

- The read\_matrix() routine *must* read all the data: the array bounds *m* and *n* by appropriate use of global variables or routine arguments, and the array entries.
- You must write a routine

void transpose ( int m, int n, double a[10][10], double b[10][10]) which copies the first *m* rows and *n* columns of a, transposed, to the first *n* rows and *m* columns of b.

• You must write a routine print\_matrix ( int m, int n, double a[10][10] ) and use it twice.

Motivation. Experimenting with functions and routines and variables or routine arguments.